CLAIMS

1. An intermediate network device for use in a computer network carrying network traffic, the intermediate network device comprising:

a traffic scheduler having one or more resources for use in forwarding network traffic received at the device at different rates;

a classification engine configured to identify received network traffic based upon predefined criteria; and

a resource reservation engine in communicating relationship with the traffic scheduler and the classification engine,

wherein, in response to a first request to reserve resources for a given traffic flow, the resource reservation engine allocates one or more resources to the given traffic flow, but does not make the one or more allocated resources available to the given traffic flow.

2. The intermediate network device of claim 1 wherein, in response to a second request to reserve resources, the resource reservation engine makes the one or more previously allocated resources available to the given traffic flow.

3. The intermediate network device of claim 2 wherein, in response to the first reservation request, the resource reservation engine places the reservation in a resources allocated state.

4. The intermediate network device of claim 3 wherein, in response to the second reservation request, the resource reservation engine transitions the reservation from the resources allocated state to a resources available state.

5. The intermediate network device of claim 4 wherein:

the resource reservation engine utilizes the Resource reSerVation Protocol (RSVP) specification standard, and

the first and second reservation requests are RSVP Reservation (Resv) messages.

6. The intermediate network device of claim 5 wherein:

the first and second Resv messages each include a two phase reservation flag,

in the first Resv message, the two phase reservation flag is asserted, and

in the second Resv message, the two phase reservation flag is deasserted.

7. The intermediate network device of claim 6 wherein the traffic flow carries voice information.

8. The intermediate network device of claim 4 wherein packets corresponding to the given traffic flow are forwarded by the device in a best efforts manner while in the resources allocated state.

9. The intermediate network device of claim 8 wherein packets corresponding to the given traffic flow are forwarded with the one or more allocated resources while in the resources available state.

10. In a computer network having a plurality of entities interconnected by a plurality of intermediate network devices having one or more resources for use in forwarding network traffic, a method for providing end-to-end resource reservations along a route between two or more entities, the method comprising the steps of:

receiving a first resource reservation message at a given intermediate network device disposed along the network route, the first resource reservation message identifying a traffic flow between the two or more entities and requesting a reservation of resources;

in response to receiving the first resource reservation message, allocating one or more of the device's resources for use in forwarding network traffic between the two or more entities; and

withholding the allocated resources from being applied to the traffic flow between the two or more entities.

11. The method of claim 10 further comprising the step of:

receiving a second resource reservation message for the traffic flow between the two or more entities; and

in response to receiving the second resource reservation message, making the allocated resources available for use in forwarding the traffic flow between the two or more entities.

12. The method of claim 11 further comprising the steps of:

in response to receiving the first resource reservation message, placing the requested reservation in a resources allocated state; and

in response to receiving the second resource reservation message, transitioning the requested reservation from the resources allocated state to a resources available state.

13. The method of claim 12 wherein the first and second resource reservation messages are Resource reSerVation Protocol (RSVP) Reservation (Resv) messages.

14. The method of claim 13 wherein the first and second Resv messages each include a message header and the two phase reservation flag is disposed in the message header.

15. The method of claim 14 wherein the steps of allocating resources, withholding resources and making allocated resources available are performed at each intermediate network device disposed along the route between the two or more entities.

16. A method for providing resource reservations along a route through a computer network between two or more entities, the method comprising the steps of:

generating a first resource reservation message identifying a traffic flow and requesting a reservation of resources;

configuring the first resource message to include a two phase reservation flag; and

asserting the two phase reservation flag so that resources within the network will be allocated, but not made available to the identified traffic flow.

17. The method of claim 16 further comprising the steps of:

generating a second resource reservation identifying the traffic flow;

configuring the second resource message to include a two phase reservation flag;

deasserting the two phase reservation flag so that the allocated resources are made available for application to the identified traffic flow.